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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/008,304

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Warren B. Nicholson

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EXAMINER

ELLINGTON, ALANDRA

ART UNIT

PAPER NUMBER

2855

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/008,304

Applicant(s)

NICHOLSON, WARREN B.

Examiner

Alandra Ellington

Art Unit

2855

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 8/18/04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-28,30 and 31 is/are allowed.
- 6) ☒ Claim(s) 1,3,7,19,20 is/are rejected.
- 7) ☒ Claim(s) 2,4-6,8-18,29 and 32-34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Final Rejection

Claim Objections

1. Claim 29 is objected to because it is an improper dependent claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 7, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Flavell (3,938,890).
 - a. With respect to claim 1, Flavell discloses a torque sensor for determining the torque acting upon a shaft, the torque sensor comprising: a radiation source 26 emitting radiation of at least one wavelength; at least one sensor 28,30 sensing the emitted radiation generating thereby at least one intensity signal indicative of the intensity of the emitted radiation; at least one signal conditioner 14,16 receptive of the emitted radiation and positioned on a shaft 12 between the radiation source 26 and the at least one sensor 28,30 thereby conditioning the emitted radiation; and a circuit ({Fig. 6}) receptive of the at least one intensity signal determining thereby the torque acting upon the shaft 12 and compensating

for the attenuation of the emitted radiation (col. 3 lines 54-68, col. 4 lines 1-51 {Figs. 1 and 6}).

b. With respect to claim 3, Flavell discloses the torque sensor as set forth in claim 1 wherein the at least one signal conditioner 14,16 comprises a plurality of polarizers having polarization axes oriented at a prescribed angle with respect to one another (col. 3 lines 54-60).

c. With respect to claim 7, Flavell discloses the torque sensor as set forth in claim 1 wherein the at least one sensor 28,30 comprises a photodiode (col. 4 lines 53-54 {Fig. 7}).

d. With respect to claim 19, Flavell discloses the torque sensor as set forth in claim 1 wherein the circuit ({Fig. 6}) is receptive of the at least one intensity signal thereby determining the torque acting upon the shaft 12 (col. 4 lines 7-40).

e. With respect to claim 20, Flavell discloses the torque sensor as set forth on claim 1 wherein the circuit is receptive of the at least one intensity signal thereby controlling the wavelength of the emitted radiation (col. 3 lines 54-68, col. 4 lines 1-51 {Figs. 1 and 6}).

Allowable Subject Matter

4. Claims 21-28, 30, and 31 are allowed.

a. The following is an examiner's statement of reasons for allowance: The reasons for allowance of claims 21-28, 30, and 31 are based on the inclusion of *determining the intensity of the radiation due to the contamination of the sensor only; and calculating the difference between the intensity of the radiation due to a*

combination of the torque acting upon the shaft and the contamination of the sensor and the intensity of the radiation due to the contamination of the sensor only to generate a compensated signal indicative only of the torque acting upon the shaft. These limitations in combination with other inventive features render the claims allowable.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."
6. Claims 2, 4-6, 8-18 and 32-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. The following is a statement of reasons for the indication of allowable subject matter: The reasons for the indication of allowable subject matter are based on the inclusion of:
 - a. In Claim 2, the radiation source comprises a plurality of parallel light emitting diodes having alternate anodes connected either to electrical ground or energized by a prescribed voltage and alternate cathodes connected either to electrical ground or energized by the prescribed voltage.
 - b. In Claim 4, the plurality of polarizers are substantially opaque to radiation at the first wavelength and substantially transparent to radiation at the second wavelength.

c. In Claim 8, the circuit comprises a clock generating a timing signal; at least one switch receptive of the timing signal and connected to the at least one sensor selecting either a first set of intensity signals indicative of the intensity of polarized radiation sensed at the first wavelength or a second set of intensity signals indicative of the intensity non-polarized radiation sensed at the second wavelength; a comparator comparing either a first intensity signal indicative of the intensity of the radiation sensed at the first wavelength to a reference signal to generate a first error signal or a second intensity signal indicative of the radiation sensed at the second wavelength to the reference signal to generate a second error signal; and a drive circuit receptive of the timing signal and the first and second error signals generating thereby a drive signal to control the emission of radiation from the radiation source.

d. In Claim 33, at least one other sensor disposed between a first polarizer of said plurality polarizers and a second polarizer of said plurality of polarizers.

Response to Arguments

8. Applicant's arguments filed 8/18/04 have been fully considered but they are not persuasive.

9. Applicant argues that the cited reference fails to teach "compensating for the attenuation of the emitted radiation."

10. The Examiner believes that the cited art discloses "compensating for the attenuation of the emitted radiation." The Applicant discloses "a change in the intensity, I , (e.g *attenuation*) of light after passing through two polarizers occurs if the angle, ψ ,

between the polarization axes of the polarizers changes" (pg. 6 [0026]). Flavell teaches that a change in the intensity of light occurs after the polarization axes P1,P2,P3 of the optical polarizers 14,16 changes (col. 3 lines 54-60,64-68, col. 4 lines 1-16). In particular, Flavell discloses the transfer function of light intensity, I , passes through two polarizers at an angle of $\psi=90^\circ$, or when the polarization axes of the two polarizers are perpendicular to each other, the transmitted light intensity will be at a minimum. Furthermore, at an angle of $\psi=45^\circ$, the transmitted light intensity will be 50% (col. 3 lines 48-52 {Fig. 1}).

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
12. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alandra Ellington whose telephone number is (571) 272-2178. The examiner can normally be reached on Monday - Friday, 7:30am - 4:00pm.

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14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 2855



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